THE RELATIONSHIP BETWEEN HOUSEHOLD INCOME AND THE QUALITY OF LIFE OF A RURAL COMMUNITY IN SRI LANKA

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1. INTRODUCTION

1.1   Aim of the study

Two thirds of mankind live in the developing countries. collectively referred to as the Third World. They are characterised in general by a low quality of life and poverty. The annual per capita income in Sri Lanka was US $550 in 1994. The per capita income in the developed countries is more than twenty times greater along with a higher quality of life. However, certain countries that are considered as 'developed' do not always demonstrate a high quality of life. The quality of life, which is now recognised as an integral part of·economic development, can be measured by using a number of indicators.

In the past, development strategies have tended to focus on overall economic growth, on the premise that national *economic* expansion (as measured by GNP, growth rate) will ultimately trickle down to all sections of society. It is therefore implied that an increasing per capita income will solve all manner of social problems including unempoyment, illiteracy, nutrition, inequality and will eventually contribute to a better quality of life. However, current development studies suggest that an increase in the average per capita income, particularly when applied to developing countries, need not necessarily signify an improvement in the quality of life for the majority of the population.

The aim of this paper is to examine the relartionship beween some specific *paramenters* that serve as indicators of the quality of life and **income at the household level,** by studying the **Bendiwewa** village in Sri Lanka. The paper attemps to investigate the relationship beween the quality of life and income. The hypothesis being tested is that **the quality of life is positively correlated with household income in Bendiwewa.**

1.2   Study Site

The island of Sri Lanka lies at the south-eastern tip of the Indian Subcontinent. The village selected for study is Bendiwewa located in the climatic region of the Dry Zone, so called because of the prolonged dry period that prevails annually from May to August. The Dry Zone is sparsely populated, dotted with hundreds of little villages of which Bendiwewa is one (Map 1). The only motorable access to Bendiwewa is a 5km dirt road which joins the main road to the town of Kekirawa which is 22 km away.

Bendiwewa has a population of 130. The people are very hospitable and gentle with a very simple lifestyle. They are not in want for their basic needs. Some households posses a few luxury items such as a radio or television. General observations suggest that Bendiwewa could be considered an above average village in respect of household income and literacy.

Most households in Bendiwewa obtain their income form farming. The four main farming practices in this area are chena cultivation (slash and burn agriculture), paddy farming, cattle rearing and cultivation of cash crops.

2. Methodology

The researchers spent one week in Bendiwewa. Thirty three percent of the total village households was sampled by interviewing the chief householder or in his absence, any adult householder present. Since the villagers are not of a hostile disposition, the information can be considered reliable to a large extent.

2.1   Household income

Household income is taken to mean the cash income of a household for one year, from activities such as agriculture, business and land-letting.

By tactful questioning, the income derived by the members of the household from different sources throughout the year was elicited. Annual expenditure on food, clothing, education, medicine, house repairs, etc., was also obtained and verified against the income. Observations were also made on the presence of household appliances to see whether they were consistent with the declared income. Using these approaches a figure for annual household income in Sri Lanka Rupees was derived. This was converted to US dollars using an exchange rate of 1.00 Sri Lankan Rupee to 0.02 US dollars (August 1994).

2.2   The Quality of Life

Measurement of the quality of life has been attempted by various international agencies and investigators. A well known study is the United Nations Research Institute for Social Development (UNRISD) in Geneva, Switzerland **List of Core Indicators of Socio- Economic Development**[1], which subsequently spawned the **Physical Quality of Life Index (PQLI)**. Another interesting study is *Social, Political and Economic Variables* by Adelman and Morris.[2] (For more information see **Appendix Table 3 and Table 4**). Most of these studies are, however, only applicable on a national scale. Therefore, some relevant indictors from these studies were reviewed and adjusted in conjunction with other indicators appropriate in terms of their significance in determining the quality of life of households in Bendiwewa. The following list of 11 indicators was thus established.

Table 1

The component indicators of the quality of life in Bendiwewa

Indicators	Weighting
Nutrition	H
Extent of Literacy	H
Average level of completed education	M
Degree of use of mass media	M
Degree of Use of Family Planning methods	M
The role of Women	M
Degree of Social Tension	M
Average Living Space	M
Housing Quality	M
Method of Water Collection	L
Type of Toilet	L

2.3   Composite indicator

An attempt was made to derive a composite indicator combining the 11 component indicators selected. In doing so, it was necessary to recognise that it would not be correct to give an equal weightage to all of the indicators

since they cannot be regarded as contributing *equally* to the quality of life. It was not possible to make a realistic assessment in *quantitative terms* of the relative importance of each indicator. Hence, in order to reduce the margin of error, the indicators were weighted into three categories High, Medium and Low in relation to what their expected contribution would be towards improving the quality of life. On this basis, indicators such as nutrition and extent of literacy were considered to be **highly significant (H)** and were awarded a **maximum of 20 points**. The following were placed in the **Medium category (M):** average level of completed education, degree of use of mass media, degree of use of family planning methods, the role of women, average living space, housing quality and degree of social tension. A **maximum of 10 points** was awarded for the above indicators. The balance, water collection and type of toilets were considered of **low significance (L)** and awarded a **maximum of 5 points**. The points awarded for each household in respect of the medium and low categories were adjusted to conform (i.e. by dividing the **medium indicators by 2** and the **low indicators by 4**) to the above scheme. The composite rating was obtained for each household by the sum of all adjusted indicators. Hence the **quality of life index (QLI)** or the composite indicator for Bendiwewa, is measured out of 120.

2.4   Assessment Methodology

Individual indicators were assessed out of a total of **20 points** as set out below.

2.4.1 Literacy (High)

The **extent of literacy** was measured by estimating to what extent each household could express itself verbally, in writing and in reading. Perfect verbal expansion was given 8 points and perfect expression in the other two were given 6 points each.

2.4.2. Nutrition (high)

Nutrition was measured on the basis of the daily diet in the village; bread or rice (without meat) for breakfast, and a plate of rice and vegetables for lunch and dinner. If the household regularly had these three meals, it got 5 points. The household **got** 3 pts for **each** source of protein (meat, fish, milk, or egg) consumed more than three times a week. Consuming any one of the above foodstuffs five times or more during the week got an extra 3 points.

2.4.3 Education (Medium)

The **average level of completed secondary education** of each household member was assessed. Entering secondary education (year 7) got 2 points and every year onwared thence (including 7th grade) until gradua-

tion in year 13 (7 years total secondary education) got 2 points. Higher education got 4 extra points. On this basis the total number of points of each member of the household was assessed and then divided by the number of people assessed. (Answers to the nearest half point.)

2.4.4 Mass Media (Medium)

There are three main forms of **mass media** in the village - radio, television and newspapers. Every household had access to at least one of these and many to all three. The households were asked how much time they spent on each media per week and time per day was thus determined. Two points were accorded for each full hour, for a maximum of 9 hours. Any household spending more than 9 hours, received two extra points.

2.4.5 Family Planning (Medium)

Any use of **family planning method** (contraception, spacing of children, planning amount of children) got 6 points. Then extra points were awarded if contraceptive methods were used on the following basis: Rarely (4 points), sometimes (8 points) and regularly (14 points).

2.4.6. Role of Women (Medium)

The role of women in the household was very hard to quantify. However men and women in each household were questioned on the extent to which the women contributed to resolve crisis situations and particpated in decision making. Points were awarded for each. If the range of participation was very little (2 points), moderate (5 points) and equal between men and women (10 points) were given.

2.4.7 Social Tension (Medium)

Social tension between households was measured by assessing the resentment or hostility (if any) of its members towards someone else in the village. A household with no problems got 20 points and two points were deducted from each household for each instance of discontent reported. If a household had a hostile relationship with more than 8 other households it got no points.

2.4.8 Average Living Space (Medium)

The **average number of persons per room** was calculated by noting the total number of rooms including kitchen and living room (in most houses of the area kitchen and living room are used for all the activities) dividing by

the number of people living in the household, rounded off to the nearest whole number. If the household had one person per room then it was awarded 20 points. If the household had 2,3,4 or 5 people per room it got 15,10,5 or 0 points respectively.

2.4.9. Quality of Household (Medium)

Depending on whether the walls were constructed out of earth, floors either dung coated or cemented, each household was awarded 1,2 or 5 points respectively. This was repeated for the floor. For the roof, 3 points were given for a low grade thatched roof, 6 points for well constructed thatched roof and 10 points for a tiled roof.

2.4.10 Toilet (low)

A house with any kind of toilet got 6 points. If the outhouse was a pit toilet the household received 8 points or if the house had a water sealed toilet it received 14 points.

2.4.11 Water Collection (Low)

Points were accorded as follows for the method of water collection: Village tank 6pts, common well 15 pts and private well 20 pts.

3. Evaluation and Analysis of Results

The survey results are shown in "**Table 2**" with the households arranged in increasing order of income. The **Quality of life Index (QLI)** of households in Bendiwewa is shown in the last column as a **composite** or sum of all the component indicatiors.

Table 2: Results

House hold	Nutrition	Literacy	Educa-tion	Mass Media	Family Planning	Role of Women	Living space	House Quality	Social Tension	Water	Toilet Type	Income $ x 10	Q L I
Wht	H	H	M	M	M	M	M	M	M	L	L		
H1	5	20	10	2	0	10	20	14	18	15	20	29	71
H2	14	20	0	10	10	10	20	10	20	15	0	36	78
H3	5	20	5	10	6	10	20	17	16	15	20	50	76
H4	5	18	7	4	0	10	20	17	20	15	20	52	71

H5	5	20	9	10	0	10	20	14	20	15	20	60	75
H6	14	20	8	8	6	10	15	10	20	15	0	60	76
H7	20	20	12	4	0	10	10	10	18	15	20	61	81
H8	14	20	5	10	6	10	15	17	14	15	20	66	81
H9	8	20	6	6	6	10	20	14	20	15	0	78	73
H10	14	20	7	4	6	10	20	17	20	6	20	80	83
H11	8	20	5	0	6	10	15	14	20	15	0	80	67
H12	0	20	4	2	6	10	15	14	18	15	0	886	58
H13	0	20	5	4	0	10	20	14	20	15	0	118	60
H14	14	20	7	4	6	10	15	14	20	15	14	12	79
H15	0	20	15	2	0	10	20	20	20	15	20	12	72
H16	5	20	11	8	0	10	20	20	20	15	20	13	78
H17	5	20	14	2	6	10	20	20	20	20	20	13	81
H18	17	20	5	6	6	10	15	14	18	15	20	146	83
H19	14	20	9	12	6	10	20	20	14	15	20	150	88
H20	5	20	7	0	0	10	20	20	0	20	20	184	63

3.1 Analysis of Results

The hypothesis being tested is that the quality of life **is positively correlated to the household income.** Thus it is also assumed that the component indicators of the quality of life should also **have a positively proportional relationship with household income.**

For each of the 11 indicators, a combined histogram/line graph was plotted as represented in figures 1 to 9. The number of points acquired out of 20 (or 120 for the composite indicator) was plotted as a bar chart on the *left- hand* Y - axis and the income was plotted as a line graph on the *right-hand* Y-axis. The X-axis displays the 20 households (HI to H20) for which the information was plotted.

A similar graph was plotted for the **QLI** as shown in **figure 10.** The **scatter** diagram in **figure 11** demonstrates a **trend line** for the QLI, with **household income ploted on the x- axis.**
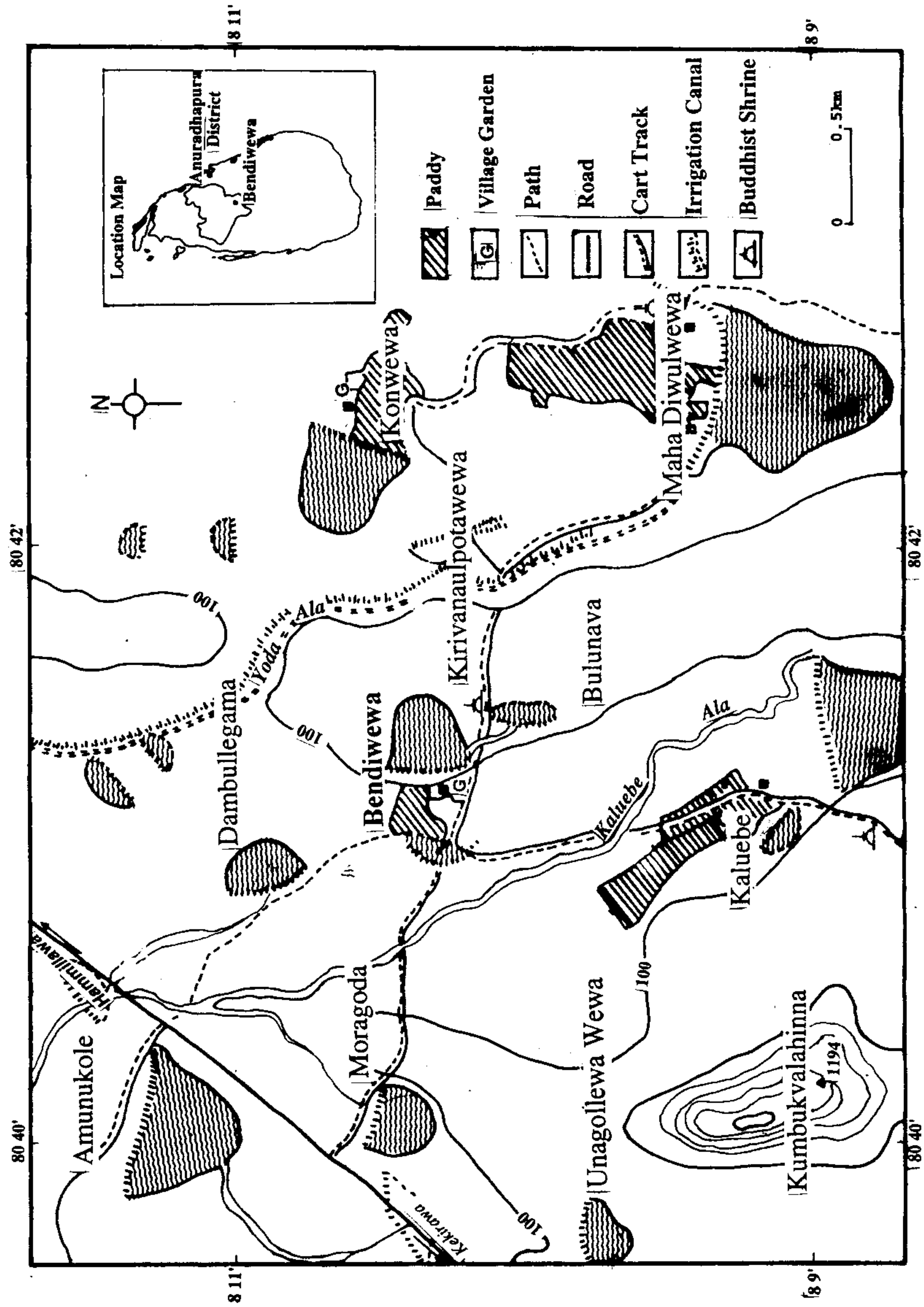
Map 1 Bendiwewa and its Surroundings

Location Map

Anuradhapura District

Bendiwewa

Paddy
Village Garden
Path
Road
Cart Track
Irrigation Canal
Buddhist Shrine

0 0.5km

Amunukole

Dambullegama

Bendiwewa

Moragoda

Unagollewa Wewa

Kumbukvalahinna
1194

Yoda = Ala

Konwewa

Kirivanaulpotawewa

Bulunava

Kaluebe

Kaluebe

Ala

Maha Diwulwewa

100

100

100

3.1.1 Nutrition

The nutrition indicator shows **no relationship** with income. The only areas in which the hypothesis seems correct is beween H5 and H7 where a rise in income has led to a rise in the quality of life. Though the difference in income between H12 and H13 is relatively high, both these households have obtained no points for nutrition. This indicates that these households do not even have regluar, basic meals, though they are in the upper end of the income scale. The reason for this situation is noted **as other** sociological problems within these families. H20, the household with highest income demonstrates a low nutrition status. Hence, **the hypothesis tests wrong for the nutrition indicateor.**
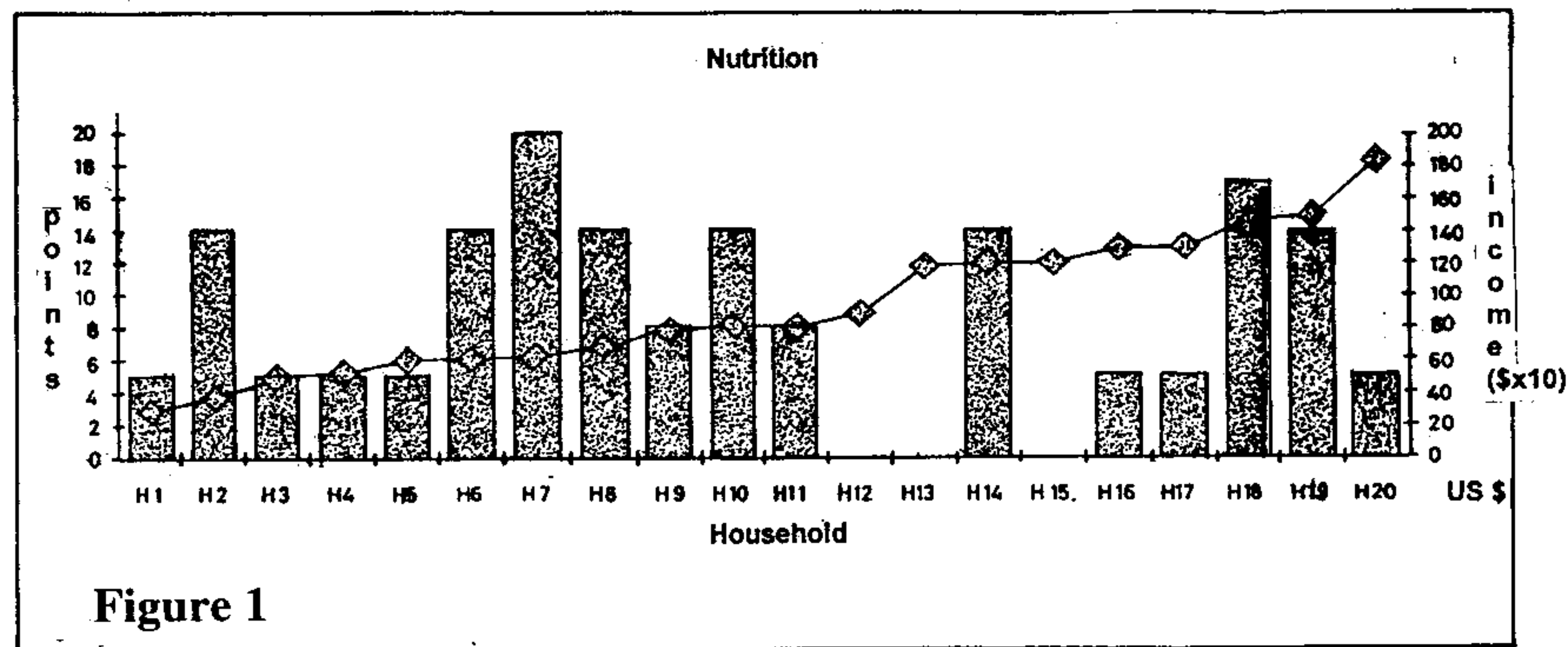
Figure 1

3.1.2 Literacy

The literacy indicator remained a **constant** high for every household irrespective of income difference (apart from H4 which acquired 18/20 points.) The national literacy rate in Sri-Lanka as a whole is a high 85%, mainly due to a long tradition of free education and hence it is not unusual that the villagers acquired a near 100% literacy. Therefore lack of correlation to household income is not surprising.
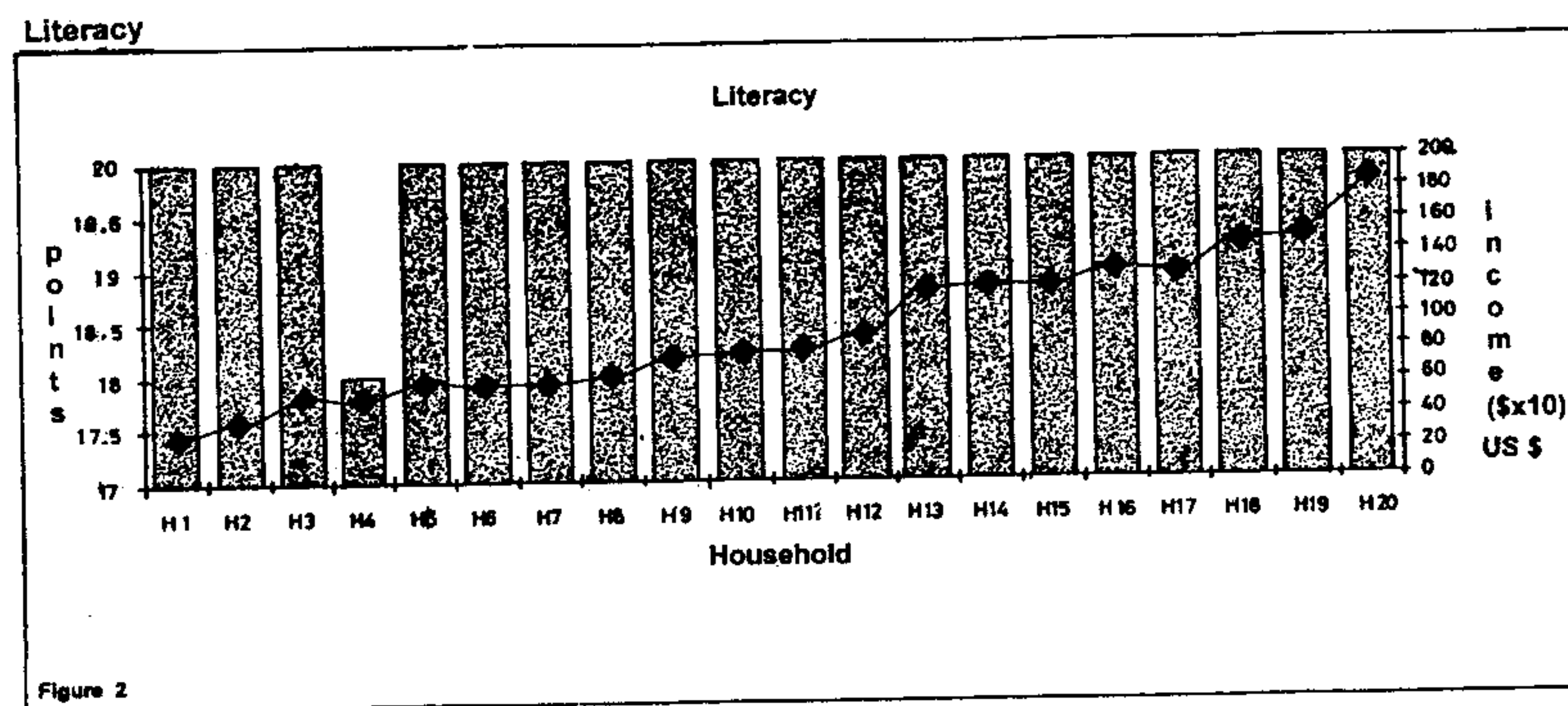
3.1.3 Education

Between H3 and H5, and between H12 and H15 education seems to have a positive relationship with household income. **However, the rest of the households do not seem to have any correlation with education.** Surprisingly, H1, with the lowest income had a high rating for education, whereas households 18, 19 and 20 with the highest incomes had poor ratings. This may be because the poorer households value education more because they do not gain a good income from farming and as it is free, unlike the richer households. They think that if they have better education they could have reached a higher income level than today by involving themselves in some other forms of employment in the state sector. Besides education is provided free of charge by the State. None of the households obtained full points, because none of the households had sent anyone for higher education apart from H15. But the household lost points because other members had very little schooling.

Education

Figure 3
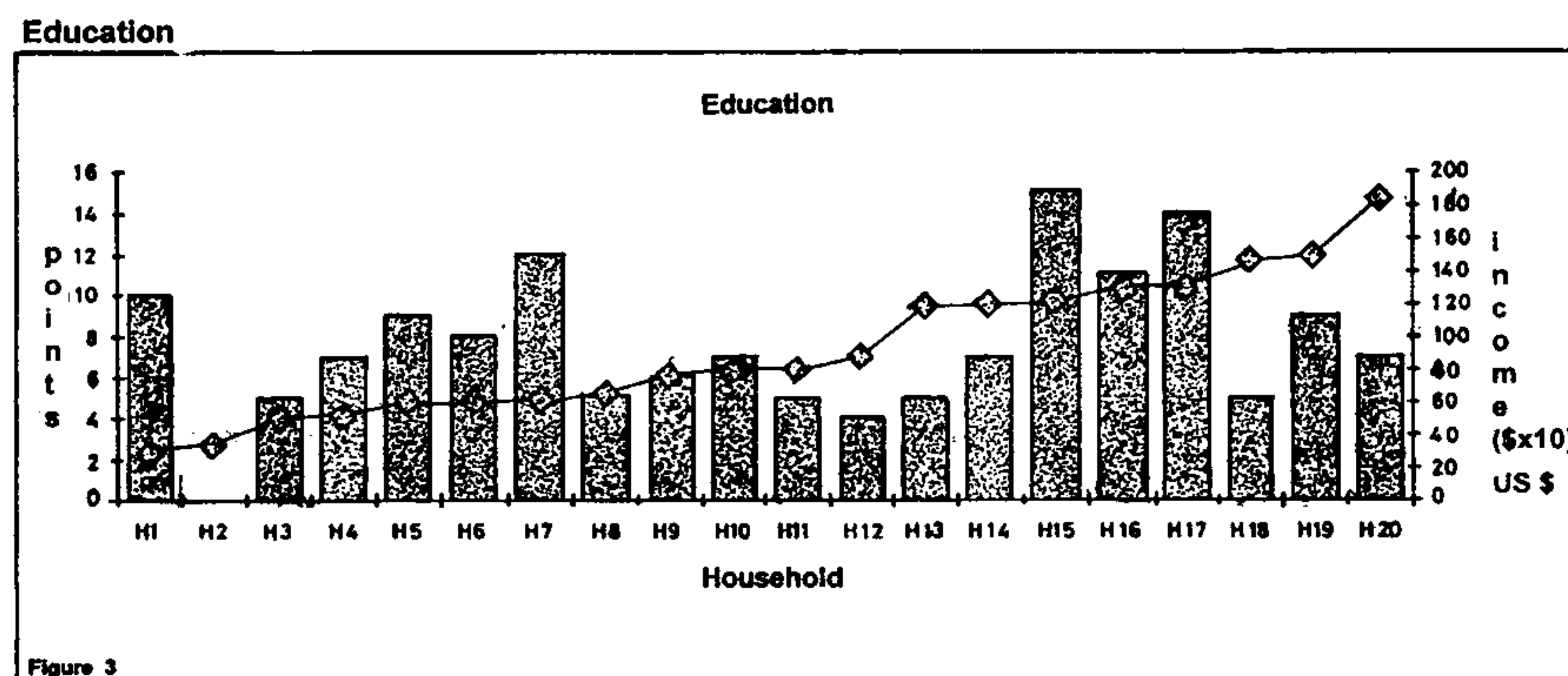
3.1.4 Mass Media

H20 and H11 got no points for mass media. H19 had the highest use of mass media, averaging little less than 6 hours of reading newspapers, listening to the radio or watching television. The hypothesis can be loosely interpreted as correct between H11 and H19.

Nevertheless, the extremely contrasting results from H20 combined with the apparent randomness in the relationship between H1 and H10 signifies that **the hypothesis does not hold for degree of use of mass media.**

Mass Media

Figure 4
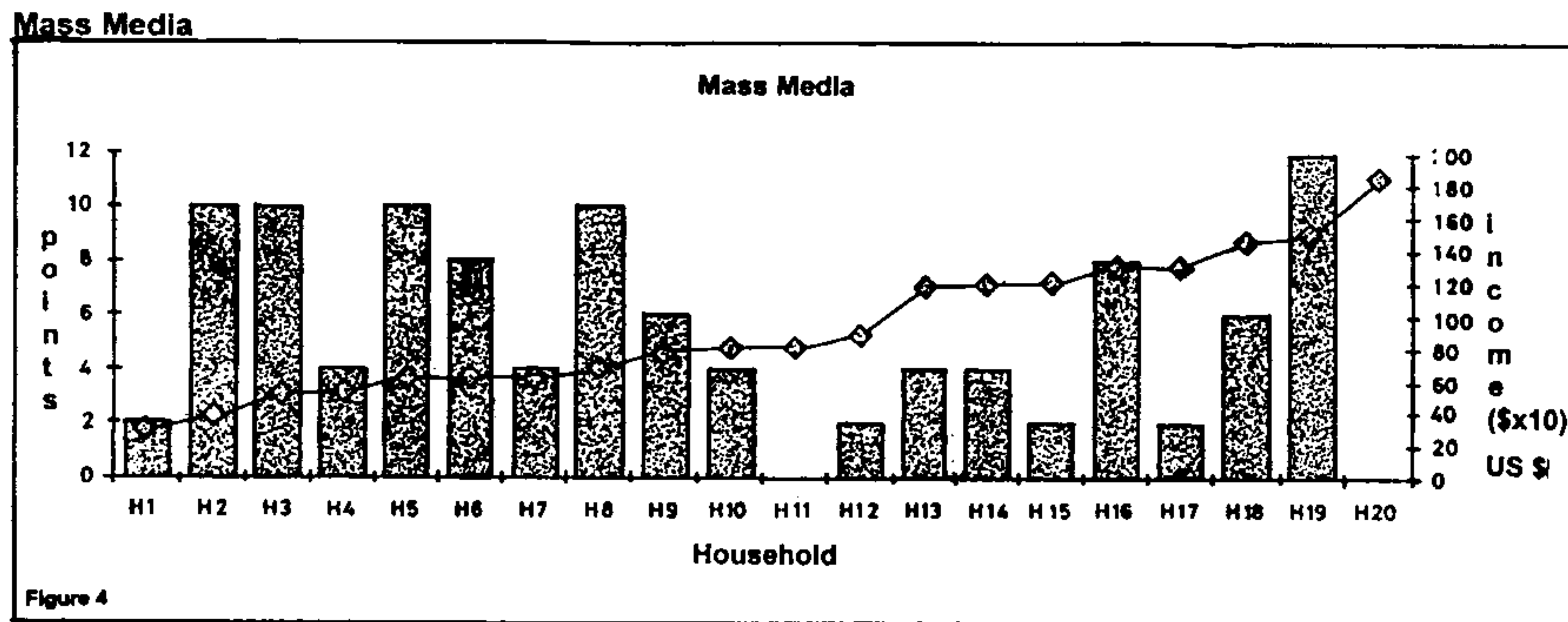
3.1.5 Family planning and Role of Women

Since both the family planning and the role of women indicators are highly discontinuous and of the same nature, they are plotted together. For family planning the households which got 6 points are those that use some form of family planning and / or contraception. Since H2 uses some form of contraception "rarely" 4 marks were also allocated. Hence H2 obtained 10 points. The relationship between the income and the indicator for each household do **not validate the hypothesis for family planning indicator. The role of women.** however **remained constant** for each household. All the households received 10 points which indicate that the women have participation in both decision making and emergencies.

Family planning and Role of Women

Figure 5
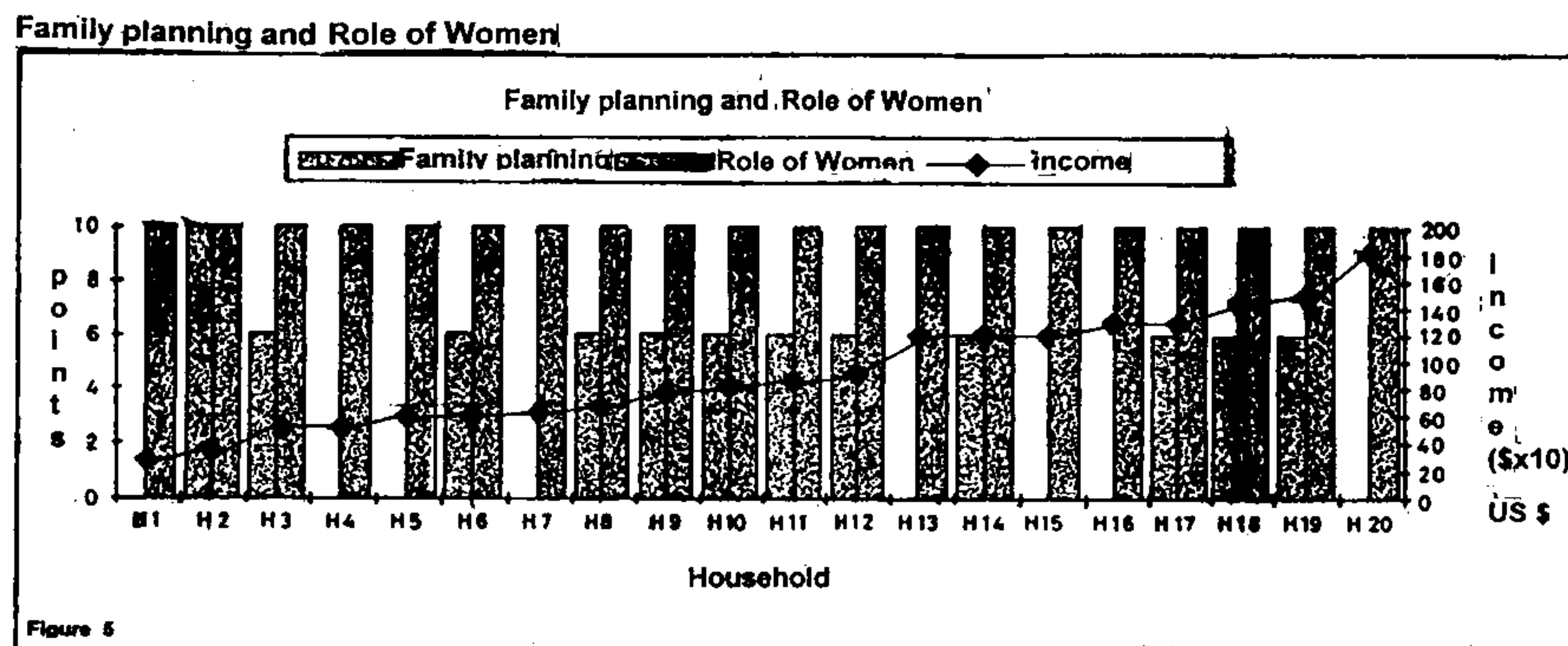
3.1.6. Social Tension

The majority of households received full points since the occupants had no disagreement with other people living in the village. H20 with the highest income was the only household to get no points because it had a conflict with over 75% of the other households. From the above graph, therefore, **social tension is not a function of household income.**

Social Tension

Figure 6
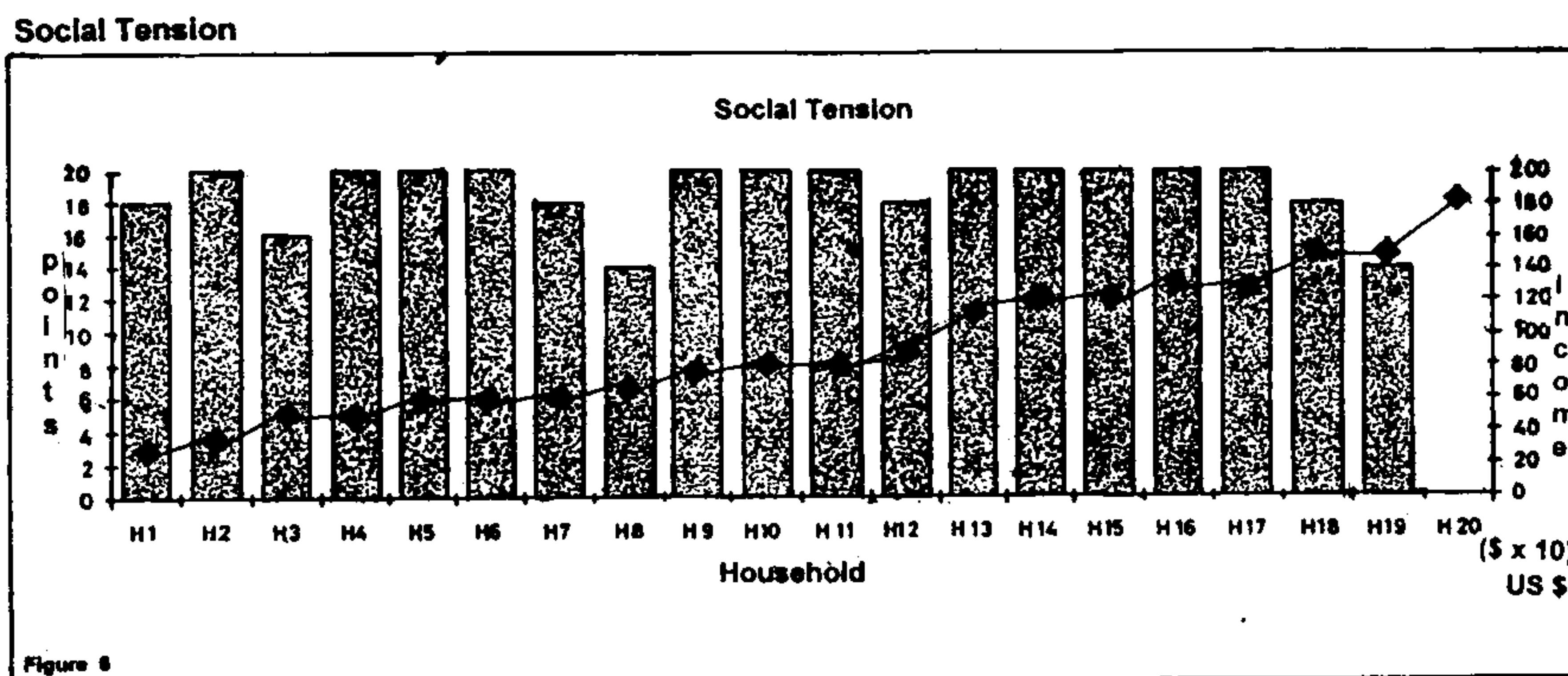
3.1.7 Average Living Space

It should be noted that the graph for average living space is highly discontinuous. The only points which could be acquired was 20, 15, 10, 5 or 0. Most of the households had one person or less per room and surprisingly most of these were in the lower income sector. Nevertheless, the above graph shows that the average living space is **not a function** of the household income.

Average Living Space

Figure 7
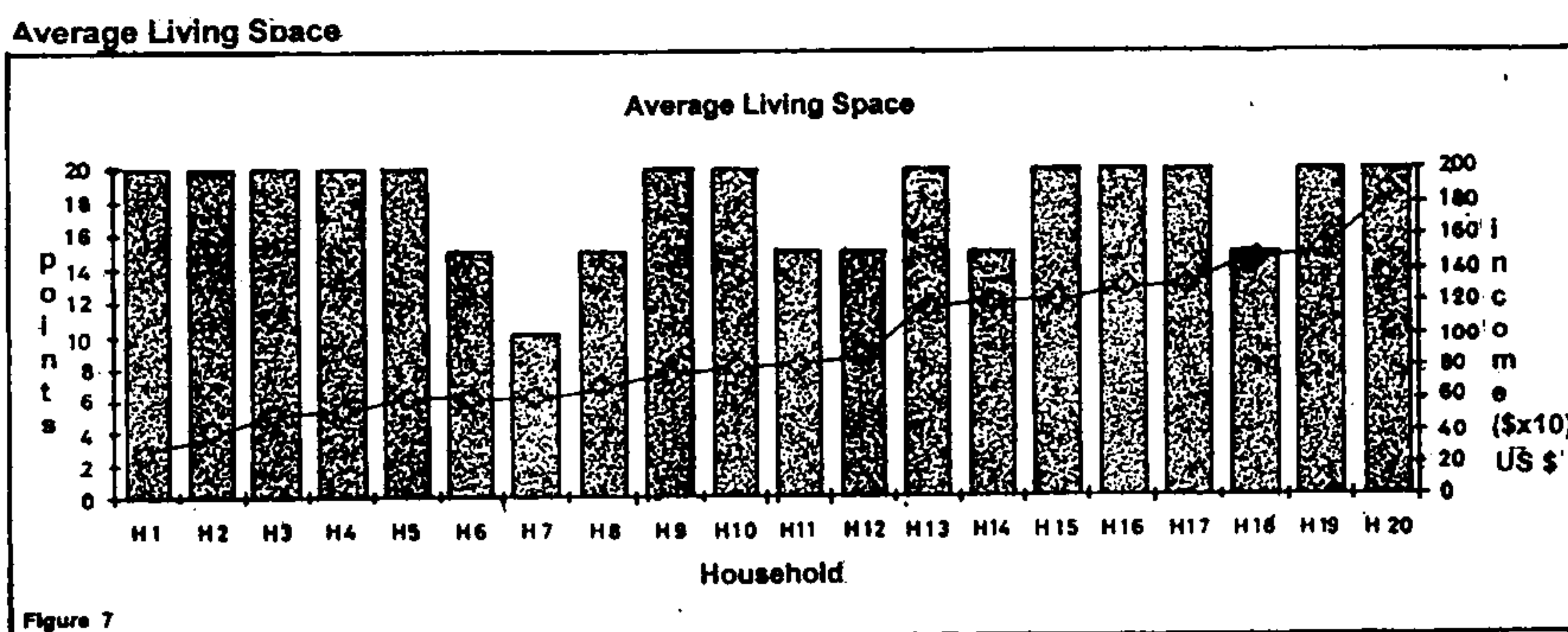
3.1.8 Quality of Household

The quality of household has *largely* a **positively proportional** relationship to household income. This is because the richer households have a larger revenue and thus a larger disposable income. This income therefore can be put into household improvement,

Quality of Household

Quality of Household

Figure 8
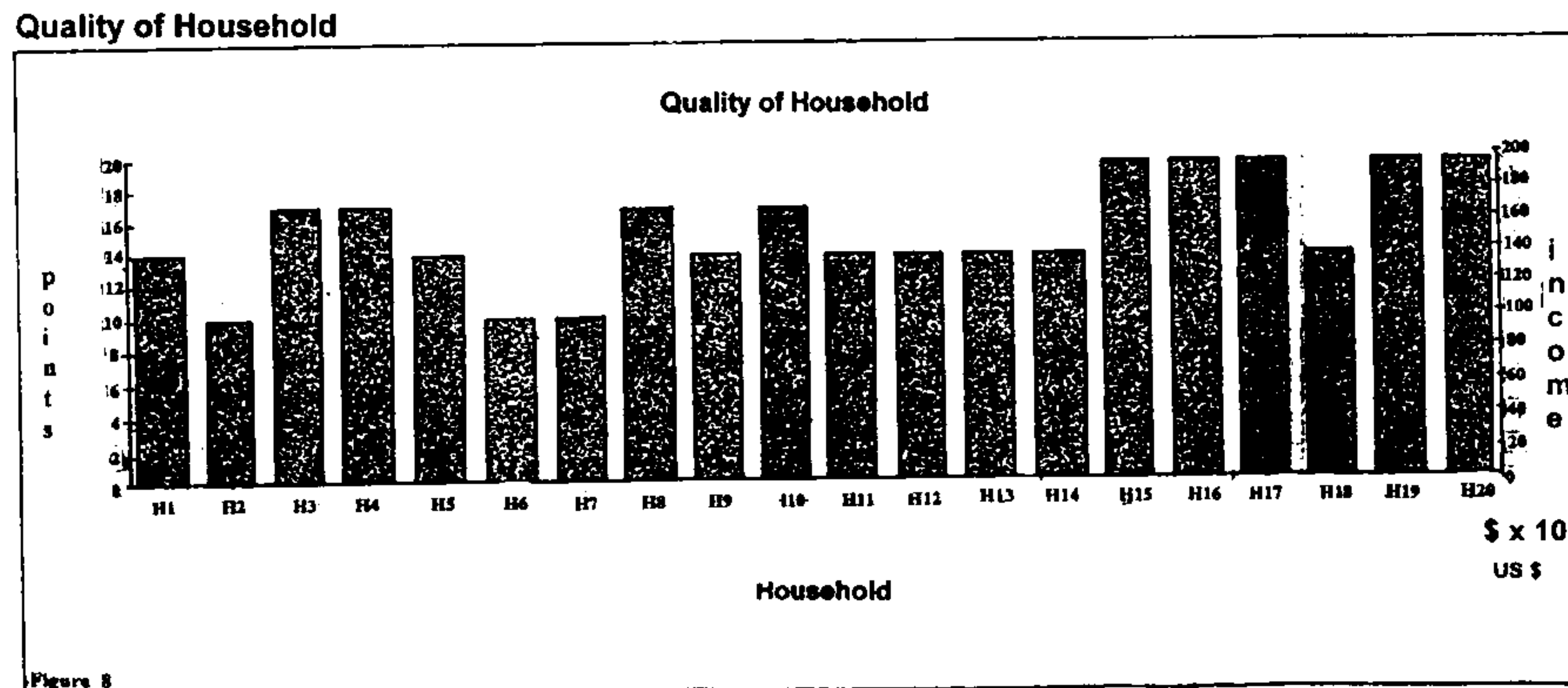
3.1.9 Type of Toilet and Method of Water Collection

The method of water collection and type of toilet were plotted together since they were both highly discontinuous and of the same nature. The method of water collection is **largely constant** apart from two high end households who have private wells. The type of toilet has divided relationship. Though 13 out of 20 households have water sealed toilets, the remaining have no toilet at all (apart from H14). Thus the relationship can **be described as having no correlation at all.**

Type of Toilet and Method of Water Collection

Type of Toilet and Method of Water Collection
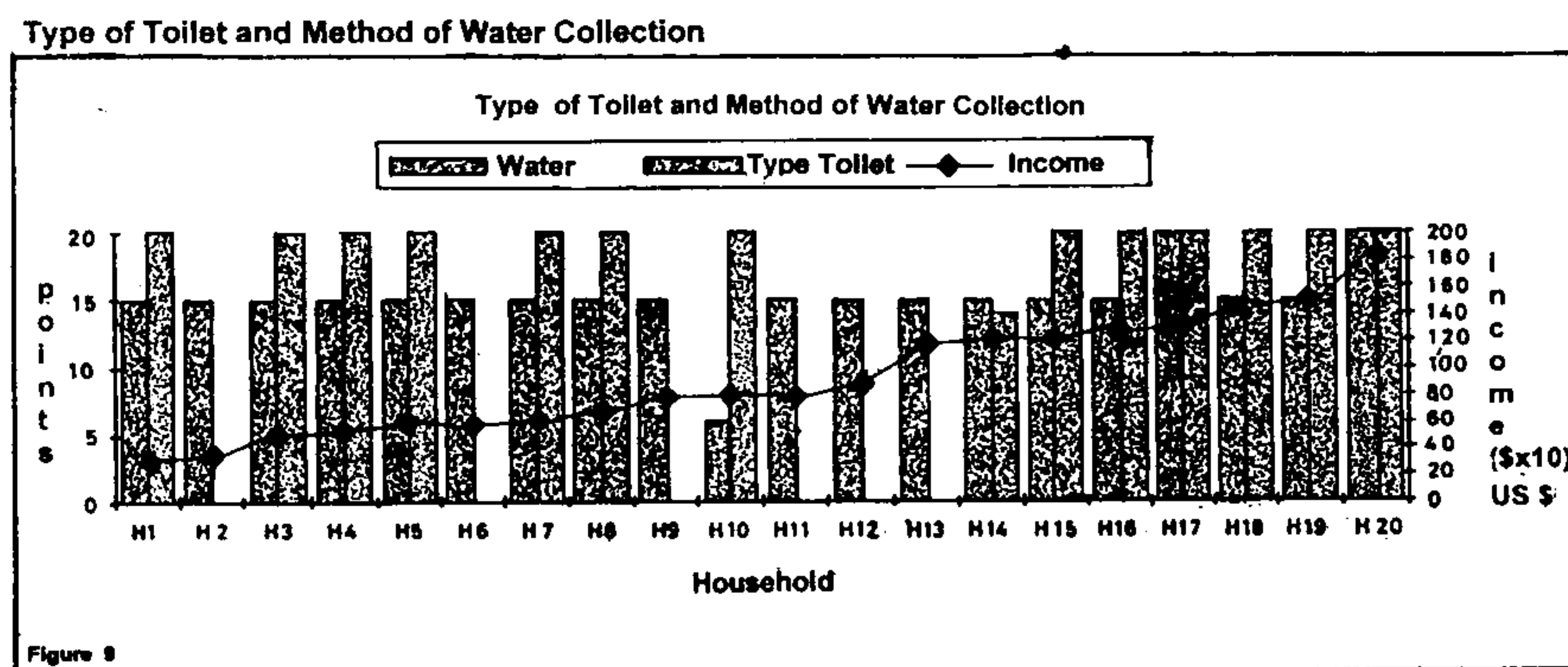
Figure 9

3.2 Quality of life / Composite Indicator

Figure 10 illustrates the *trends within* the QLI as whole, as shown by the arrows. None of the households acquired full points (120). H19 had the highest number of points with 88 and H12 the lowest with 58.

It can be seen that between H1 and H8, the points increased progressively apart from at H3 where the points decreased before picking up again from H4. Therefore, between H1 and H8 there was a *net increase* of 12

points in the **QLI. The Lower income households, namely those between H1 and H8 demonstrate generally a positive correlation with income.** This is because these households are for the most part subsistence households whose only concern is to survive adequately. Thus they put little input into their land and therefore, get little income. They spend little extra money on expensive projects such as home improvements, though they gain points in education, literacy and mass-media since they place little value in a farming future for their children.

H9 dipped to 73 before picking up 10 points again at H10. Between H10 and H14 there was a *net decrease* of 1 point in the QLI, with H12 and H13 dropping to 58 and 60 points respectively.

The middle income households are those getting *at least a small* profit from their land. In their quest to gain larger profits they tend to overwork the land with too many costly inputs. This results in diminishing profits over time and the cycle continues with increased inputs to increase the yield. Since much work needs to be done, children are quickly removed from school and little time is spent on reading or watching television. Since their profits are small, these households may not have the capacity to spend on excessive nutrition, housing improvements or building toilets. **Thus the middle income households display some of the lowest QLI ratings and generally an *inverse* relationship to income.**

Quality of Life/ Composite Indicator

Figure 10
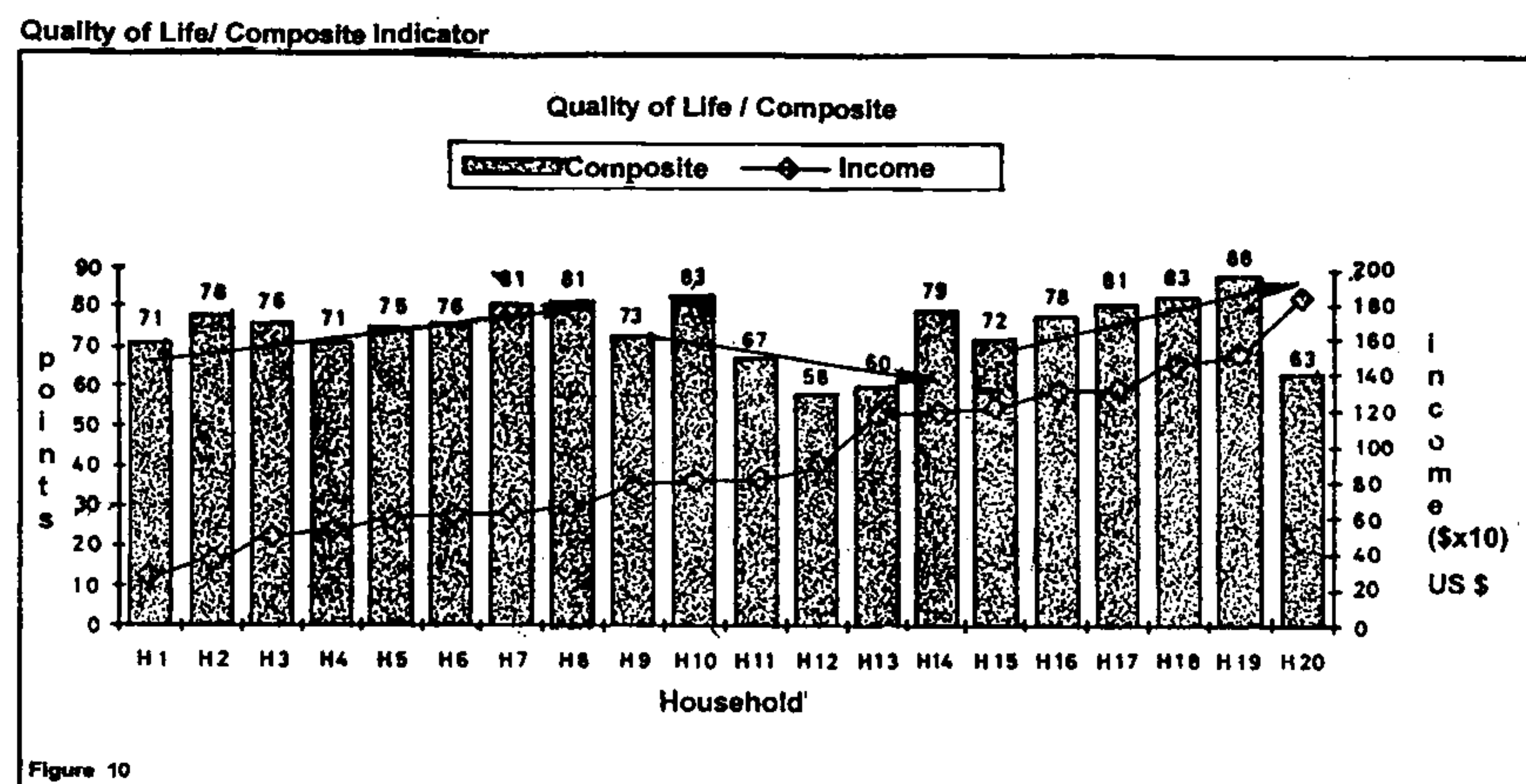
The **largest net increase** in the QLI appered between H15 and H19 - the high income households-with a difference of 16 points. The higher income households have a larger disposable income and therefore they gain many points in the nutrition, housing quality, water collection and type of

toilet indicators. Since these families are doing well in farming they place little importance in schooling, reading and writing and literacy. Though they lose points for this factor, **the higher income households demonstrate a positive relationship with income**. The exception to this is H20. This household with the highest income by a margin of $ 340 surprisingly received the third lowest rating of 63 points. H20 not only got the second lowest composite indicator but it also scored very poorly in all the other 11 indicatiors.

The scatter graph shown in figure 11 is useful in determining the *overall* trend. To plot the trend, a narrow intersecting or passing very close to a maximum amount of points was drawn. The graph shows the amount of points obtained out of 120 for the composite indicator versus the individual household incomes. Clearly the overall trend is upward though with a very shallow gradient. This indicates that a **high increase** in household income, (i.e. from H1 to H20) will result only in a **slight increase** in the composite quality of life indicator.
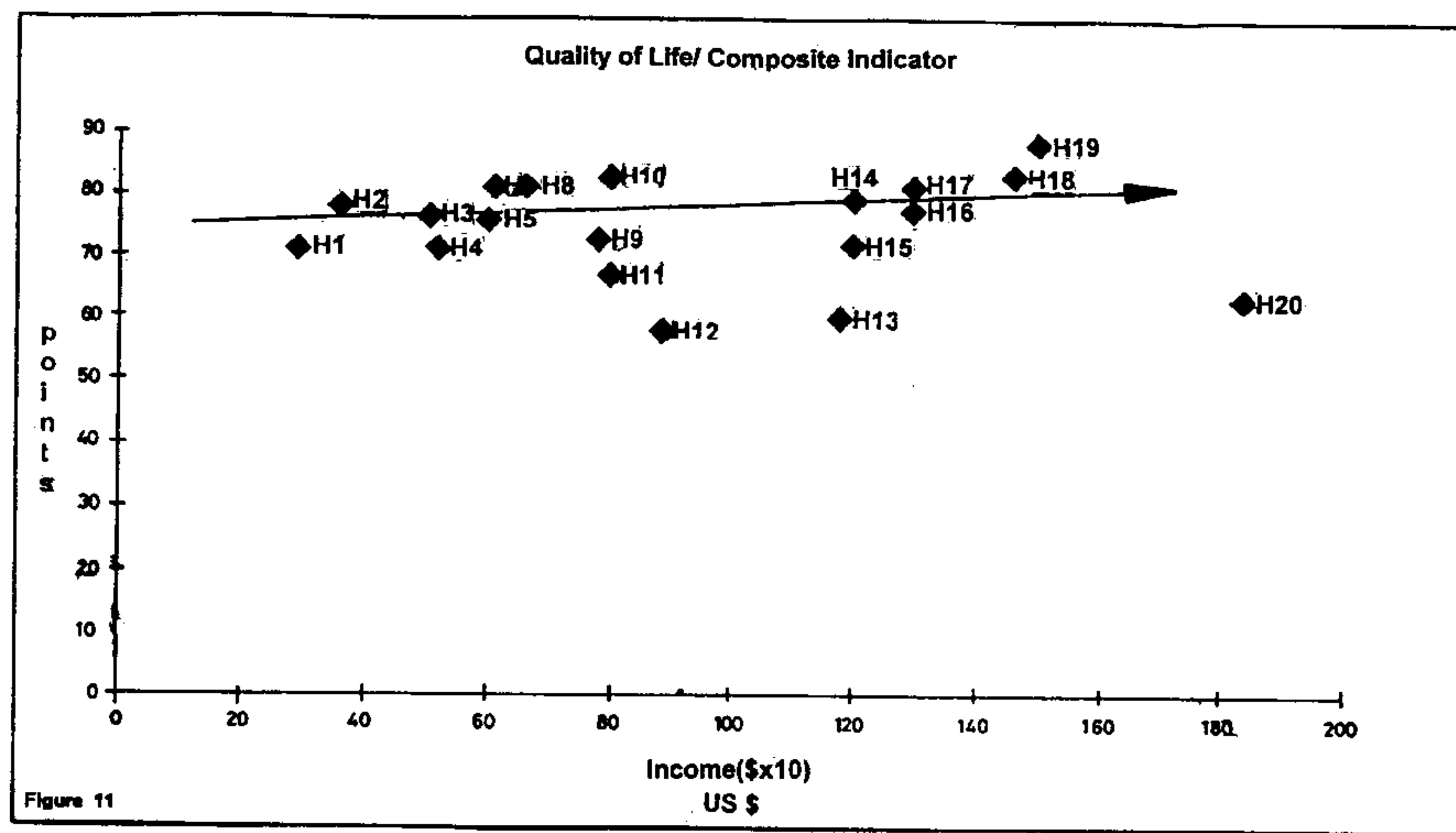
Figure 11

4. Conclusion

The analysis shows that **70% of the households demonstrated a positive correlation between household income and the QLI as shown by figure 11. Thus, the quality of life is a function of income in Bendiwewa and the hypothesis, that the quality of life is positively correlated with household income, is correct to *a large extent*.** Since the QLI appears to be proportional to household income, the QLI should be equal to some constant (equal to the gradient) by the household income. Let the constant

be called the **determinant of the quality of life** or 'd'. Assuming the 'minimum' quality of life which exists in Bendiwewa - i.e: when househlod income is zero-is a different constant 'm', which can be found by extending the trend line to the y-axis) then using basic mathematic principles;

QLI = (d x household income) + m

The QL equation can be used to find the QLI of any house hold *on the trend line*, if **m** and **d** are known;

The minimum quality of life index points (m) in Bendiwewa is :75

The determinant of the quality of life for Bendiweewa is: **0.004037**

This constant is called the determinant of the quality of life, because it is of vital importance. **For every different village studied using the same indicators, this constant will determine the relationship between the quality of life and income for that particular location.** For example, in Bendiwewa, a US$I increase in household income will lead to a 0.004037 increase in the QLI, likewise $1000 rise in income will only result in a 4.037 point increment or an increase of approximatlely 3.36% in the QLI. Thus the **larger is the** *determinant,* **the greater is the** *responsiveness* **of the QLI to change in household income.** Bendiwewa has a very low determinant because the behaviour of its residents is influenced by their culture which was not taken into account in the survey. The residents are **culturally ingrained** to such a degree that high income and low income households portray very little difference-unlike in an urban environment where the effect of other cultutral values influences are very strong.

It is important to remember that the above equation was derived from the *overall* trend line. This signifies that **not all households conform to the above equation** *and* **that different trends exist** *within* the overall trend as illustrated by figure. 10. Thus, the above equation can be also applied to these individual trends. However, it is only necessary to examine the gradients of these three trends to recogize that the **high income** households demonstrate a **high responsiveness** to change in income, **low income** households a **relatively low responsiveness** and middle income households a **negative** responsiveness to chage in income.

The 11 indicators were chosen because they were thought to-represent all aspects of life *in Bendiwewa*. The quality of life in Bendiwewa, as measured by these indicators is, therfore, a subjective representation of only one individual investigation in one location which is by no means comprehensive towards the concept of the quality of life.

Assuming the above model holds true for other villages and societies, it raises a number of issues vis-a-vis national development policies. It is thought that national economic growth will eventually 'trickle down' and better the quality of life all sections of society. This 'trickle down' model seems to have two major flaws, the first is that not all sections of society *respond* in the same manner to income changes, and the 'trickle' becomes a 'drip' once it has gone down from the richest to the poorest unless equity in distribution is ensured.

The significant point is that the section of society in most need of help, - the poor - have a **low** *responsiveness* to changes in income whereas the rich have a **high** *responsiveness*. However, it must be remembered that this model is built only for Bendiwewa and does not necessarily hold true for other locations, especially the urban environment which has a number of significant differences.

Since the quality of life does not improve satisfactorily with rising incomes, it is far more productive and efficient in the long term to do the reverse i.e. **improve the national economy by raising the quality of life at the grass-roots,** beginning with direct intreventions aimed at the poor. Policies such as providing quality foodstuffs, accessible education, training schemes and cheap housing are not only beneficial in themselves politically and humanitarinaly - but beneficial in an economic sense also. Human capital is a country's most important resource and the quality of its treatment will have important ramifications on any national economy.

Acknowledgments

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